



**FLORENCE COPPER INC.**

1575 W. Hunt Highway, Florence, Arizona 85132 USA

[florencecopper.com](http://florencecopper.com)

U.S. Certified Mail #  
7017 3040 0000 6064 5836

September 24, 2019

David Albright  
U.S. Environmental Protection Agency  
Region 9, Ground Water Office, WTR-9  
75 Hawthorne Street  
San Francisco, California 94105-3901

**Subject: M57-O Magnesium Verification Sample Results**

Dear Mr. Albright:

Per UIC permit R9UIC-AZ3-FY11-1 Part II H.2.a.iv, Florence Copper (FC) is submitting this report evaluating the causes, impacts, and mitigation measures related to an exceedance of the alert level for magnesium in M57-O. The UIC alert level for magnesium in M57-O is set at 18 mg/L. The verification sample collected August 27, 2019 returned a result of 19 mg/L using EPA method 200.7.

Florence Copper has maintained an inward hydraulic gradient at all times during the operation of the PTF wellfield. Based on the background values for magnesium collected at other oxide and lower basin fill wells in the area (see Table 1), it is highly likely that this magnesium increase in M57-O is due to water being drawn towards the wellfield as opposed to an excursion. This is because the magnesium values reported from these other wells are higher.

As shown on Table 1, ambient values for magnesium in MW01-O ranged from 14 mg/L to 23 mg/L, with four of the nine results above 20 mg/L. Ambient values for magnesium in M58-O ranged from 10 mg/L to 24 mg/L, with five of the nine results at or above 20 mg/L.

It is also likely that the inward hydraulic gradient created by over-pumping in the wellfield is bringing solutions downward from the lower basin fill unit, just above the oxide – but below the middle fine grain unit confining layer. The magnesium values for MW01-LBF ranged from 23 mg/L to 27 mg/L under background conditions. M56-LBF ambient results ranged from 22 mg/L to 26 mg/L.

Magnesium values for the replacement well M57R-O are also higher. The value returned from a sample collected on June 12, 2019 was 31 mg/L, and the result from a sample collected July 22, 2019 was 27 mg/L.

The ambient data collection period for calculation of alert levels for M57-O occurred over a nine-month period, from July 2017 to March 2018. The PTF wellfield was under construction during this period and

**Taseko**

not operational. Nine months most likely does not capture long-term background trends in water quality, or changes caused by seasonally wet, normal, or dry years. Although ambient water levels have not changed significantly in the area of M57-O; they are about five feet lower than last year's ambient sampling, which is likely due to PTF operations and drier than normal summer conditions in 2019. This has caused a decline in water levels in the area immediately adjacent to M57-O and a drawdown of water from the UBFU.

There is no aquifer water quality standard or federal drinking water health levels or standards for magnesium. Impacts from increased dissolved magnesium in M57-O is not considered to be a risk to public health or the environment in general.

Mitigation measures taken by FCI have included an increase in recovery well flow rates on the west side of the PTF wellfield and increased wellfield over-pumping in general. In addition, injection flows have been decreased at Wells I-01 and I-04. The increase in recovery rates and decrease in injection rates has resulted in higher hydraulic gradients towards the PTF wellfield. These adjustments will be closely monitored going forward to assess impacts on the water quality due to these recent adjustments.

Please let me know if you require any additional information.

Sincerely,  
Florence Copper Inc.

A handwritten signature in black ink, appearing to read 'Dan Johnson', with a stylized, flowing script.

Dan Johnson  
Vice President | General Manager

**Table 1: Magnesium Values of Nearby Wells**

Well	Sample Date	Magnesium
M58-O	7/18/2017	10
M58-O	8/15/2017	14
M58-O	9/12/2017	20
M58-O	10/24/2017	16
M58-O	11/16/2017	17
M58-O	12/13/2017	20
M58-O	1/9/2018	21
M58-O	2/7/2018	22
M58-O	3/6/2018	24

Well	Sample Date	Magnesium
MW-01-LBF	12/28/2017	25
MW-01-LBF	1/11/2018	23
MW-01-LBF	1/25/2018	23
MW-01-LBF	2/8/2018	23
MW-01-LBF	2/22/2018	24
MW-01-LBF	3/8/2018	24
MW-01-LBF	3/22/2018	26
MW-01-LBF	4/5/2018	27
MW-01-LBF	4/19/2018	24

Well	Sample Date	Magnesium
MW-01-O	12/28/2017	23
MW-01-O	1/11/2018	19
MW-01-O	1/25/2018	22
MW-01-O	2/8/2018	17
MW-01-O	2/22/2018	22
MW-01-O	3/8/2018	22
MW-01-O	3/22/2018	18
MW-01-O	4/5/2018	18
MW-01-O	4/19/2018	14

**Table 1: Magnesium Values of Nearby Wells**

Well	Sample Date	Magnesium
M56-LBF	7/17/2017	26
M56-LBF	8/16/2017	24
M56-LBF	9/13/2017	24
M56-LBF	10/25/2017	23
M56-LBF	11/20/2017	23
M56-LBF	12/12/2017	23
M56-LBF	1/15/2018	23
M56-LBF	2/9/2018	22
M56-LBF	3/7/2018	24

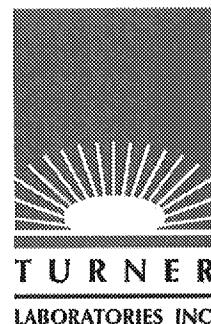
**ATTACHMENT A**  
**M57-O Laboratory Report**

**FLORENCE COPPER INC.**

1575 W. Hunt Highway, Florence, Arizona 85132 USA [florencecopper.com](http://florencecopper.com)

**Taseko**

September 10, 2019



Ian Ream  
Florence Copper Inc.  
1575 W. Hunt Highway  
Florence, AZ 85132

TEL (520) 374-3984  
FAX (520) 374-3999

Work Order No.: 19H0672  
Order Name: Quarterly (Level I)  
Indicator Parameters

RE: Quarterly (Level I) Indicator Parameters

Dear Ian Ream,

Turner Laboratories, Inc. received 1 sample(s) on 08/27/2019 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.  
ADHS License AZ0066

Elizabeth Kasik  
Laboratory Director

**Client:** Florence Copper Inc.  
**Project:** Quarterly (Level I) Indicator Parameters  
**Work Order:** 19H0672  
**Date Received:** 08/27/2019

**Order:** Quarterly (Level I) Indicator  
Parameters

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
19H0672-01	M57-0.8-27	Ground Water	08/27/2019 1400

**Client:** Florence Copper Inc.  
**Project:** Quarterly (Level I) Indicator Parameters  
**Work Order:** 19H0672  
**Date Received:** 08/27/2019

**Case Narrative**

E8 Analyte reported to MDL per project specification. Target analyte was not detected in the sample.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND Not Detected at or above the PQL

PQL Practical Quantitation Limit

DF Dilution Factor



# Turner Laboratories, Inc.

Date: 09/10/2019

Client: Florence Copper Inc.  
 Project: Quarterly (Level I) Indicator Parameters  
 Work Order: 19H0672  
 Lab Sample ID: 19H0672-01

Client Sample ID: M57-0.8-27  
 Collection Date/Time: 08/27/2019 1400  
 Matrix: Ground Water  
 Order Name: Quarterly (Level I) Indicator Parameters

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
CP Dissolved Metals-E 200.7 (4.4)									
Magnesium	19		3.0		mg/L	1	08/28/2019 1010	08/28/2019 1241	MH
Anions by Ion Chromatography-E300.0 (2.1)									
Fluoride	ND	0.17	0.50	E8	mg/L	1	08/27/2019 1700	08/27/2019 1935	EJ
Sulfate	130		50		mg/L	10	08/28/2019 1105	08/28/2019 1157	EJ
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	640		20		mg/L	1	08/28/2019 0834	09/10/2019 1430	CR

Client: Florence Copper Inc.  
 Project: Quarterly (Level I) Indicator Parameters  
 Work Order: 19H0672  
 Date Received: 08/27/2019

## QC Summary

analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qual
Batch 1908345 - E 200.7 (4.4)									
Blank (1908345-BLK1)				Prepared & Analyzed: 08/28/2019					
magnesium	ND	3.0	mg/L						
CS (1908345-BS1)				Prepared & Analyzed: 08/28/2019					
magnesium	11	3.0	mg/L	10.00	110	85-115			
CS Dup (1908345-BS1)				Prepared & Analyzed: 08/28/2019					
magnesium	11	3.0	mg/L	10.00	110	85-115	0.004	20	
Matrix Spike (1908345-MS1)				Source: 19H0568-01		Prepared & Analyzed: 08/28/2019			
magnesium	60	3.0	mg/L	10.00	49	108	70-130		
Matrix Spike (1908345-MS2)				Source: 19H0568-01		Prepared & Analyzed: 08/28/2019			
magnesium	48	3.0	mg/L		49		70-130		
Matrix Spike (1908345-MS3)				Source: 19H0590-01		Prepared & Analyzed: 08/28/2019			
magnesium	60	3.0	mg/L	10.00	50	98	70-130		
Matrix Spike (1908345-MS4)				Source: 19H0590-01		Prepared & Analyzed: 08/28/2019			
magnesium	48	3.0	mg/L		50		70-130		

Client: Florence Copper Inc.  
Project: Quarterly (Level I) Indicator Parameters  
Work Order: 19H0672  
Date Received: 08/27/2019

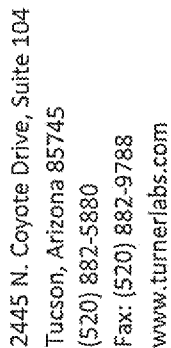
## QC Summary

analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qual
Batch 1908341 - SM2540 C									
Duplicate (1908341-DUP1) Source: 19H0623-01 Prepared: 08/28/2019 Analyzed: 09/04/2019									
Total Dissolved Solids (Residue, filterable)	1900	20	mg/L		1900		0.4	5	

Client: Florence Copper Inc.  
 Project: Quarterly (Level I) Indicator Parameters  
 Work Order: 19H0672  
 Date Received: 08/27/2019

## QC Summary

analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1908324 - E300.0 (2.1)										
Blank (1908324-BLKI)				Prepared & Analyzed: 08/27/2019						
fluoride	ND	0.50	mg/L							
sulfate	ND	5.0	mg/L							
CS (1908324-BSI)				Prepared & Analyzed: 08/27/2019						
fluoride	2.2	0.50	mg/L	2.000		108	90-110			
sulfate	13	5.0	mg/L	12.50		100	90-110			
CS Dup (1908324-BSD1)				Prepared & Analyzed: 08/27/2019						
fluoride	2.1	0.50	mg/L	2.000		105	90-110	2	10	
sulfate	12	5.0	mg/L	12.50		98	90-110	2	10	
Matrix Spike (1908324-MSI)				Source: 19H0649-01		Prepared & Analyzed: 08/27/2019				
fluoride	3.1	0.50	mg/L	2.000	1.0	105	80-120			
sulfate	34	5.0	mg/L	12.50	21	99	80-120			
Matrix Spike Dup (1908324-MSD1)				Source: 19H0649-01		Prepared & Analyzed: 08/27/2019				
fluoride	3.1	0.50	mg/L	2.000	1.0	104	80-120	0.8	10	
sulfate	34	5.0	mg/L	12.50	21	98	80-120	0.2	10	



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